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U. S. DEPARTMENT OF AGRICULTURE.
OFFICE OF EXPERIMENT STATIONS—CIRCULAR 106.
A. C. TRUE, Director.

THE AMERICAN SYSTEM
OF
AGRICULTURAL EDUCATION.

BY

A. C. TRUE AND DICK J. CROSBY,
Of the Office of Experiment Stations.

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LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Office of Experiment Stations,
Washington, D. C., October 28, 1910.

Sir: I have the honor to transmit herewith, for publication as Circular 106, a revision of Circular 83 of this Office, which is a brief general account of the American system of agricultural education and includes descriptions of departments of original research and graduate study in agriculture, agricultural colleges and the various grades of instruction provided by them, secondary schools of agriculture, and the work along agricultural lines in elementary schools.

Respectfully,

A. C. True,
Director.

Hon. James Wilson,
Secretary of Agriculture.

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THE AMERICAN SYSTEM OF AGRICULTURAL EDUCATION.

INTRODUCTION.

The American system of agricultural education includes a number of different classes of institutions which, taken together, provide all grades of instruction in agriculture from graduate courses leading to the doctor's degree to nature-study courses in the kindergarten and the primary school. These institutions may be considered under four general heads: (1) Departments of original research and graduate study in agriculture, (2) agricultural colleges, (3) secondary schools of agriculture, and (4) elementary schools. The secondary and elementary instruction in agriculture is of comparatively recent development, but is becoming an important factor in American education. The graduate and collegiate courses, on the other hand, are well established and take rank with the best agricultural courses in the much older universities and colleges of Europe.

The American institutions for instruction and research in agriculture are brought together to constitute a national system of higher education in the sciences and industries through the Association of American Agricultural Colleges and Experiment Stations, the Office of Experiment Stations of the Department of Agriculture, and the Bureau of Education of the Department of the Interior, each of these agencies being entitled to membership in the association. This association was organized in Washington October 18, 1887, and has since been very active and efficient in its efforts to promote agricultural education. At its convention in 1894 it appointed a committee on entrance requirements, courses of study, and degrees, whose final report, presented two years later, was adopted. This report recommended (1) physical geography; (2) United States history; (3) arithmetic, including the metric system; (4) algebra to quadratics; (5) English grammar and composition, together with the English requirements of the New England Association of Colleges and Preparatory Schools; and (6) ancient, general, or English history, as a standard of entrance requirements for college courses, and suggested that all colleges unite in requiring the first five subjects as a minimum for admission to their lowest collegiate classes. The committee also urged that the colleges require (1) mathematics through algebra, geometry, and trigonometry; (2) physics and chemistry, with laboratory work in each; (3) English language and literature; (4) other languages (at least one modern); (5) mental science, and logic or moral science; (6) constitutional law; and (7) social, political, or economic science for four-year courses leading to a bachelor's degree.

In 1895 the association appointed a standing committee on methods of teaching agriculture, which has since presented 13 reports of progress. The first report[1] was devoted to recommendations regarding agricultural nomenclature and a review of agricultural education in European countries; the second report to suggestions regarding the subjects to be included in a four-year course in agriculture; the third, fourth, and fifth reports included outlines for courses in agronomy, zootechny, agrotechny, rural engineering, and rural economics; the sixth report described methods and facilities for teaching agronomy in the agricultural colleges; the seventh[2] showed how secondary courses in agriculture may be incorporated into existing high-school courses; the eighth discussed the relation of the natural sciences to agriculture in a four-year college course; the ninth[3] was devoted to the teaching of agriculture in the rural common schools; the tenth and eleventh[4] dealt with a secondary course in agronomy; the twelfth was a preliminary report on a college course in rural engineering; and the thirteenth[5] was a secondary course in animal husbandry and dairying. These reports have been of great value to the colleges in developing their courses in agriculture and reducing them to pedagogic form, and, though it has not been found feasible in any single institution to adopt all of the recommendations of the committee, yet many of its suggestions have been acted upon with benefit to the courses of study in agriculture, so that now these courses are coming to be recognized as coordinate with other university courses in both undergraduate and postgraduate work.

DEPARTMENTS OF ORIGINAL RESEARCH AND GRADUATE STUDY IN AGRICULTURE.

At the head of the system of agricultural education stand the United States Department of Agriculture and the agricultural experiment stations in the different States and Territories, organized chiefly as departments of the land-grant colleges. These constitute very largely the university or graduate branch of agricultural education in this country, having for their chief functions the discovery and dissemination of new truths regarding the theory and practice of agriculture. Organized primarily with reference to research, both the Department and the stations to a considerable extent directly promote agricultural education, in the technical sense, by giving instruction to students. This is done by opening their laboratories to assistants who participate in research work while continuing their studies or by imparting new inspiration and knowledge to students who become acquainted with the research work by indirect contact through residence at the institutions where it is being conducted.

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[1] A summary of reports 1–5 and 8 has been published as Circular 69 of the Office of Experiment Stations.

[2] U. S. Dept. Agr., Office of Experiment Stations Circular 49.

[3] U. S. Dept. Agr., Office of Experiment Stations Circular 60.

[4] U. S. Dept. Agr., Office of Experiment Stations Circular 77.

[5] U. S. Dept. Agr., Office of Experiment Stations Circular 100.

The work of the Department of Agriculture along educational lines is rapidly increasing. Not only does it continue to open its laboratories and libraries to officers of the agricultural colleges and experiment stations who come here to carry on special investigations or to enlarge their knowledge of scientific facts and principles in a special line, but its different bureaus, offices, and divisions are doing much to encourage all phases of agricultural education throughout the country.

The Weather Bureau, through its officials at the various stations throughout the country, is taking an active part in public education along meteorological lines. The Bureau of Plant Industry is doing much to aid the school-garden movement by distributing to a large number of schools throughout the country special packages of vegetable and flower seeds, together with circulars containing directions for the planting and care of school gardens, and by cooperating with other agencies in conducting experimental school gardens. The Office of Public Roads is training road engineers. The Forest Service is reaching many educators with literature, lantern slides, and other illustrative material concerning the conservation of the forest resources of the country.

THE OFFICE OF EXPERIMENT STATIONS.

While the other bureaus of this Department are doing valuable educational work along the lines of research in which they are engaged, the Office of Experiment Stations is the general agency of the Department for the promotion of agricultural education throughout the United States and is constantly enlarging the scope and extent of this branch of its work. The educational work of the Office is now organized into two branches, one dealing with agricultural colleges and schools and the other with farmers' institutes and other forms of extension work in agriculture.

The work of the Office relating to agricultural colleges and schools includes four general classes: (1) The collection and publication of information regarding the progress of agricultural education at home and abroad; (2) studies of different grades of American and foreign schools in which agriculture is taught; (3) work in cooperation with the Association of American Agricultural Colleges and Experiment Stations and other important associations dealing with educational matters; and (4) the giving of aid to agricultural colleges and schools and to State and local school authorities along lines of agricultural education. This work is in charge of Mr. D. J. Crosby, as specialist in agricultural education.

This branch of the Office conducts a department of agricultural education in the Experiment Station Record, prepares and publishes statistics, courses of study, circulars of information, and other literature relating to agricultural education, aids State and local school authorities in organizing agricultural courses in schools and colleges and in securing competent teachers, takes part in important agricultural conventions and conferences, aids teachers in securing suitable agricultural literature for their work, and, in short, acts as a clearing house for agricultural education in this country. Its educational work in cooperation with the Association of American Agricultural Colleges and Experiment Stations is done largely through a committee of the association on instruction in agriculture, of which the Director of the Office is chairman and the specialist in agricultural education is secretary.

The work of the Office in its relation to farmers' institutes and other forms of education extension in agriculture is in the immediate charge of Prof. John Hamilton, farmers' institute specialist, and consists in: (1) Collecting data respecting the condition and progress of farmers' institutes in the United States and in foreign countries; (2) preparing and editing bulletins, illustrated lectures, courses of study for movable schools of agriculture, charts for use in institute teaching, and reports upon institute work; (3) conducting correspondence with persons interested in agricultural education, distributing agricultural literature, and supplying institute officials with expert advice; (4) collecting and compiling the laws of the several States and Territories relating to farmers' institute work, visiting educational institutions in the interest of college extension, and lecturing before representative farmers' institutes and other educational assemblies; (5) assisting in organizing farmers' institutes and movable schools of agriculture in the several States and Territories; (6) preparing programs and securing speakers for the annual meeting of the American Association of Farmers' Institute Workers, and compiling and editing the reports of the association; (7) securing annually a list of the farmers' institute lecturers of the United States, together with the topics that they discuss and a record of the personal history of each lecturer; (8) studying the operations of the

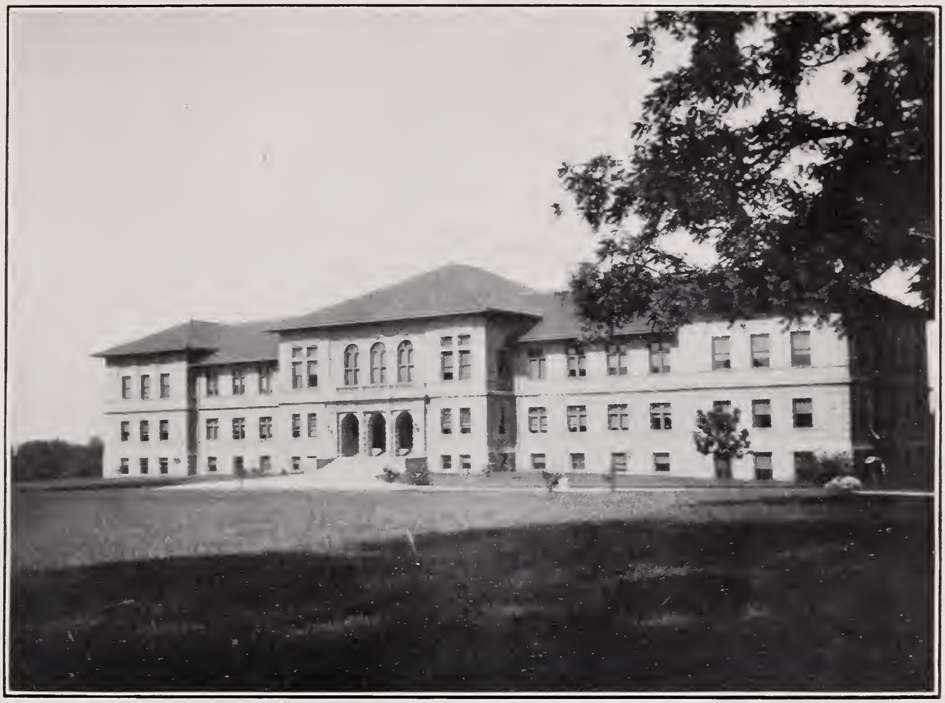


FIG. 1.—AGRICULTURAL BUILDING, OHIO STATE UNIVERSITY.

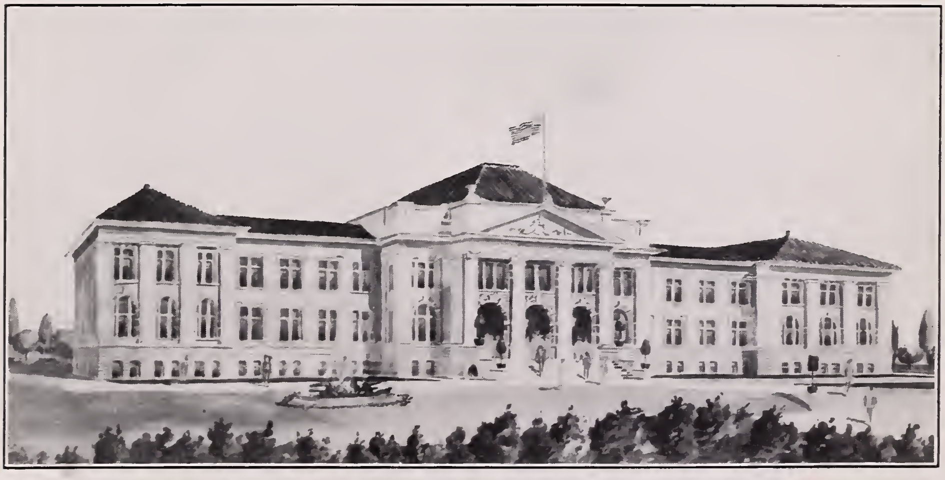


FIG. 2.—AGRICULTURAL HALL, NORTH CAROLINA COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

AGRICULTURAL BUILDING AT IOWA STATE COLLEGE.

farmers' institutes and other forms of agricultural extension and suggesting methods for their improvement; (9) in cooperation with the committee on extension work of the Association of American Agricultural Colleges and Experiment Stations, assisting in collecting and formulating information respecting the best methods for conducting extension work in agriculture; and (10) acting as a clearing house in securing speakers from the Department of Agriculture and other sources for institute service.

THE GRADUATE SCHOOL OF AGRICULTURE.

The Graduate School of Agriculture was successfully inaugurated in 1902 at the Ohio State University. (Pl. I, fig. 1.) The plan for this school was originated by Prof. Thomas F. Hunt, at that time dean of the School of Agriculture and Domestic Science of the Ohio State University, the purpose being to establish a course for advanced students in agriculture at which the leading teachers and investigators of the agricultural colleges and experiment stations and this Department should present summaries of the recent progress in agricultural science, illustrate improved methods of teaching agricultural subjects, and afford a somewhat extended opportunity for the discussion of live topics drawn from the rapidly advancing science of agriculture. This first session of the Graduate School of Agriculture was held under the auspices of the Ohio State University and received its financial support from that institution. Subsequently the Association of American Agricultural Colleges and Experiment Stations assumed the responsibility of conducting the school, and under its auspices successful sessions of the school were held in 1906 at the College of Agriculture of the University of Illinois, in 1908 at the New York State College of Agriculture at Cornell University, and in 1910 at the Iowa State College of Agriculture and Mechanic Arts. (Pl. II.) Dr. A. C. True, Director of the Office of Experiment Stations, has been dean of the Graduate School of Agriculture during its four sessions. The 1910 session of the school was of unusual interest and importance, with a course of study embracing plant physiology and pathology, agronomy, horticulture, animal husbandry, dairying, poultry, rural engineering, and rural economics, and with a faculty of 57 regular members and 17 speakers at the special sessions, drawn from the United States Department of Agriculture, 18 agricultural colleges and experiment stations in this country, several universities not included among the land-grant institutions, and 3 foreign countries. The total enrollment of students was 205. These came from 39 States, the District of Columbia, and 6 foreign countries.

GRADUATE DEPARTMENTS OF AGRICULTURAL COLLEGES.

Graduate work in agriculture has been offered by some of the agricultural colleges for many years, but in the last few years, as a result of the rapid developments in the science of agriculture, the character of graduate work has improved and the number of institutions offering graduate courses in agriculture has greatly increased. Quite a number of land-grant institutions now maintain graduate schools, and there are at least 41 colleges which provide agricultural work leading to the master's degree and 10 which offer courses in agriculture leading to the doctor's degree.

AGRICULTURAL COLLEGES.

There are now in the United States 67 agricultural colleges, organized under the acts of Congress of July 2, 1862, August 30, 1890, and March 4, 1907, giving Government aid to colleges for the benefit of agriculture and the mechanic arts. In 16 States separate institutions are maintained for white and colored students, and in 15 of these courses in agriculture are maintained. The colleges of agriculture may be divided into three classes, determined by differences in their organization: (1) Colleges offering only agricultural courses; (2) colleges offering additional courses, especially those in mechanic arts; and (3) colleges of agriculture connected with universities.

The only purely agricultural college in the United States is that in Massachusetts. Agricultural and mechanical colleges are maintained in Alabama, Colorado, Connecticut, Delaware, Hawaii, Iowa, Kansas, Maryland, Michigan, Mississippi, Montana, New Hampshire, New Jersey, New Mexico, North Carolina (Pl. I, fig. 2), North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Virginia, and Washington. Separate institutions of this class for colored students (including departments of universities located apart from the other colleges of those universities) are maintained in Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Texas, Virginia, and West Virginia. In all of these institutions except that in Arkansas courses in agriculture are conducted, but for the most part the instruction is confined to courses below the college grade. A similar institution, maintained by State and private funds, is the well-known Tuskegee Normal and Industrial Institute in Alabama.

Colleges of agriculture (or equivalent schools or departments) in universities are maintained, with the aid of national funds, in Arizona, Arkansas, California, Florida, Georgia, Idaho, Illinois, Indiana, Kentucky, Louisiana, Maine, Minnesota, Missouri, Nebraska, Nevada, New York, Ohio, Tennessee, Vermont, West Virginia, Wisconsin, and Wyoming.

Owing to the complicated organization of many of the institutions having courses in agriculture and the fact that the students in agricultural courses in many subjects are in classes with students in other courses, and that much of the equipment is used in common by the students in all the courses, it is impracticable to show by statistics, with exactness, the means and facilities for strictly agricultural education. The general statistics of the land-grant institutions may, however, serve to show with how great an enterprise, devoted chiefly to higher education along scientific and industrial lines, agriculture has been joined in permanent alliance, and to indicate in some measure how extensive are the educational facilities at the command of the youth of the country who have sufficient intelligence, courage, and perseverance to follow out long and thorough courses of study in agriculture.

Educational institutions receiving funds from the Federal Government are now in operation in all the States and Territories except Alaska. Sixty-five of these institutions maintain courses of instruction in agriculture. The aggregate value of the permanent funds and equipment of the land-grant colleges and universities in 1909 is estimated to be as follows: Land-grant fund of 1862, $13,236,304; other land-grant funds, $2,970,788; other permanent funds, $18,078,040; land grant of 1862 still unsold, $8,378,907; farms and grounds owned by the institutions, $15,136,198; buildings, $38,389,128; apparatus, $3,553,989; machinery, $2,803,630; libraries, $4,136,739; live stock, $542,246; miscellaneous equipment, $4,656,718; total, $111,882,687. The income of these institutions in 1909, exclusive of the funds received from the United States for agricultural experiment stations ($1,180,780), was as follows: Interest on land grant of 1862, $763,274; interest on other land grants, $127,733; United States appropriation under acts of 1890 and 1907, $1,750,000; interest on endowment or regular appropriation, $257,295; State appropriation for current expenses, $5,959,552; State appropriation for buildings or other special purposes, $3,955,713; income from endowment, other than Federal or State grants, $783,720; tuition fees, $1,139,917; incidental fees, $1,020,052; miscellaneous, $2,325,598; total, $18,082,854. The value of the additions to the permanent endowment and equipment of these institutions in 1909 is estimated as follows: Permanent endowment, $1,144,914; buildings, $3,411,201; libraries, $307,807; apparatus, $303,239; machinery, $163,013; live stock, $86,454; miscellaneous, $638,518; total, $6,055,146.

The number of persons in the faculties of the colleges of agriculture and mechanic arts in 1909 was as follows: For preparatory classes, 503; for collegiate and special classes, 3,294; total, counting none twice, 3,664. In the other departments the faculties aggregate 2,091, making a grand total of 5,755 persons in the faculties of the land-grant institutions. The students in 1909 in the colleges for white persons were as follows: (1) By classes—Preparatory, 6,909; collegiate, 27,579; short course or special, 13,069; postgraduate, 1,107; other departments, 21,969; total, counting none twice, 67,227. (2) By courses: Four-year—Agriculture, 4,999; horticulture, 158; forestry, 223; veterinary science, 215; household economy, 1,443; engineering, 17,892. Shorter than four years—Mechanic arts, 841; agriculture, 6,135; horticulture, 233; forestry, 81; dairying, 610; veterinary science, 510; household economy, 738; teachers' courses in agriculture, 197 (four-year, 144; three-year, 39; two-year, 14); summer school of agriculture for teachers, 1,905; military tactics, 20,477.

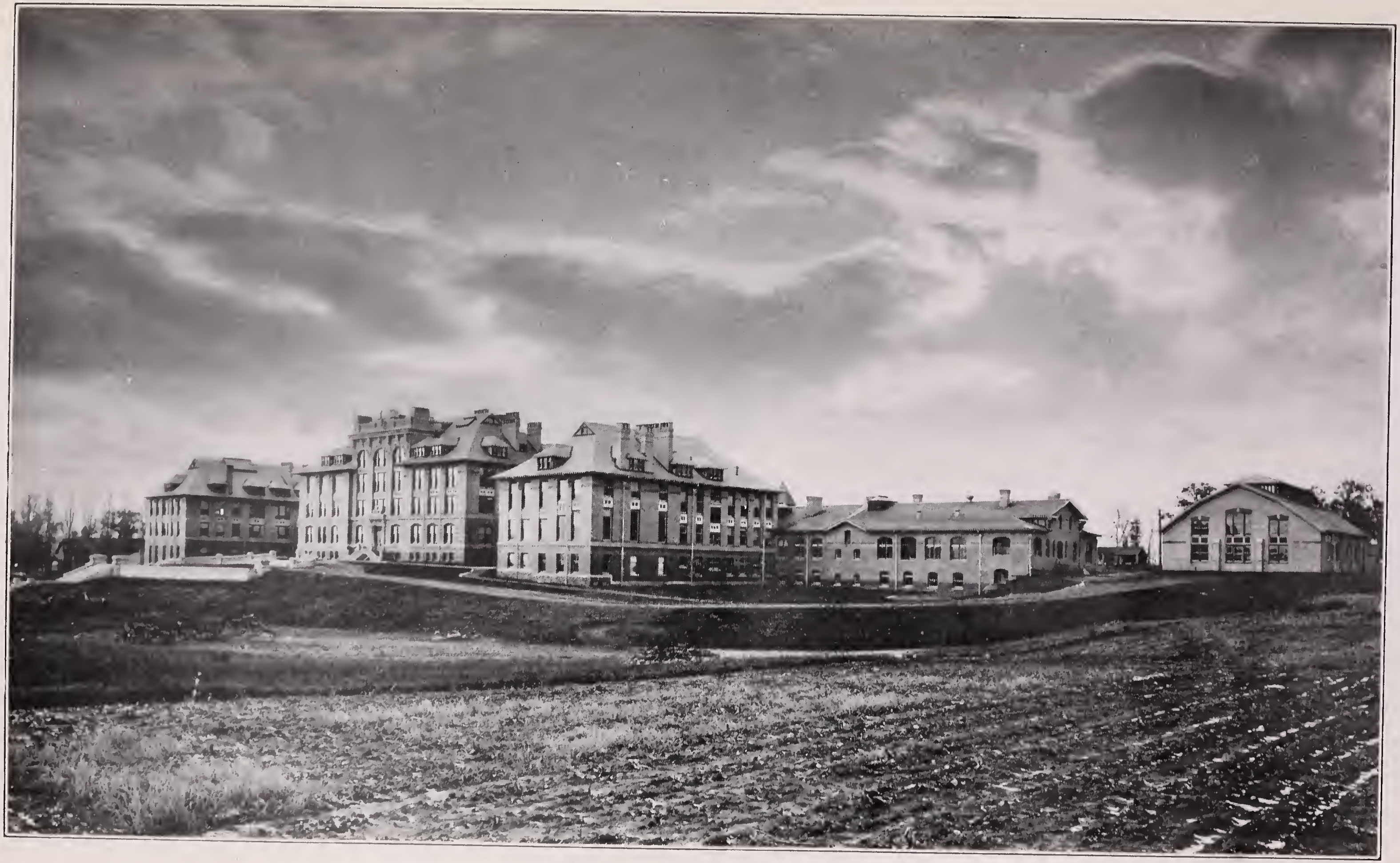
The students in colleges and schools for colored persons were as follows: (1) By classes—Preparatory, 5,109; collegiate, 951; short or special, 229; other departments, 477; total, 6,586. (2) By courses—Agriculture, 1,442; industrial courses for boys, 2,331; industrial courses for girls, 4,677; military tactics, 1,678.

The graduates in 1909 were 6,353, and since the organization of these institutions, 81,749. The average age of graduates in 1909 was 22 years and 2 months. The total number of volumes in the libraries was 2,327,773, and the total number of pamphlets 650,255. The total number of acres of land granted to the States under the act of 1862 was 10,570,842, of which 1,026,847 are still unsold.

THE FOUR-YEAR COLLEGE COURSES.

In nearly all of these institutions the college course in agriculture extends over four or more years. In cases where more than four years are required an additional year or two years have been added to prepare students for admission to the regular course. The course varies considerably in different institutions as regards the requirements both for admission and for graduation. In some cases students are admitted directly from the common schools, while in others the entrance requirements are based on a four-year course in a standard high school. Gradually, however, most of the institutions which formerly admitted students from the common schools are raising their entrance requirements to correspond more nearly with the recommendations of the committee on entrance requirements of the Association of American Agricultural Colleges and Experiment Stations.

The course at the Massachusetts Agricultural College may be considered typical of relatively high-grade college courses in agriculture as given in American colleges. Candidates for admission must be at



BUILDINGS OF THE NEW YORK STATE COLLEGE OF AGRICULTURE.

Reading from left to right: Agronomy; Main Building; Dairying; Dairy Manufactures; Animal Husbandry.

least 16 years old, and are required either to present satisfactory credentials from accredited schools or to pass examinations in English, one foreign language (French or German), United States history and civics, Old World history (ancient, medieval, and modern, English, or general), algebra (through progressions), plane geometry, and five units from a list of 19 subjects in language, history, mathematics, science, drawing, and manual training. The student is required to follow a definitely prescribed curriculum during one and one-half years, after which he is allowed to select the major portion of his work from a large number of electives in agriculture, horticulture, biology, chemistry, mathematics, landscape gardening, language, civil engineering, agricultural education, rural social science, and military science. In the freshman year the following subjects are included in the course: Agriculture, chemistry, algebra, trigonometry, English, French or German, hygiene, public speaking, military tactics, and solid geometry; in the sophomore year, agriculture, horticulture, zoology, botany, physics, English, French or German, agricultural industry, and military tactics, and in the second semester two electives; in the junior and senior years, political science, physical education, and electives. Completion of the four years of undergraduate work entitles the student to the degree of bachelor of science.

A somewhat different arrangement prevails at the Michigan Agricultural College, where the agricultural students, after pursuing a prescribed course for two years, are allowed to elect between certain groups of courses in agriculture, horticulture, forestry, and veterinary science. Iowa State College offers four full four-year courses in agriculture, in which the student is allowed to specialize in agronomy, dairying, animal husbandry, or horticulture. Arrangements similar to those in one of the above institutions prevail in most of the colleges which are maintained apart from universities.

While the elective system is gaining ground in all the agricultural colleges, there is a tendency among those connected with the universities to offer a large number of electives in special phases of agriculture and to impose few restrictions regarding the grouping of subjects, except as to the necessary prerequisites for certain advanced subjects. The University of Illinois, for example, offers 20 electives in the department of agronomy, 22 in the department of animal husbandry, 21 in the department of dairy husbandry, 32 in the department of horticulture, and arranges suggestive outlines for those who wish to specialize in animal husbandry, dairying, horticulture, floriculture, and landscape gardening. At the New York State College of Agriculture at Cornell University (Pl. III) students are allowed to elect most of the work of the last two years in the regular college course. For this purpose 19 groups of electives are provided, as follows: (1) Botany, (2) agricultural chemistry, (3) entomology and general invertebrate zoology, (4) plant physiology, (5) plant pathology, (6) soil technology, (7) farm crops and farm management, (8) plant breeding, (9) horticulture, (10) animal husbandry, (11) poultry husbandry, (12) dairy industry, (13) rural engineering and architecture, (14) rural economy and sociology, (15) rural art, (16) plant industry seminar, (17) general biology, (18) meteorology, and (19) extension teaching.

Another tendency of these larger institutions is worthy of notice in this connection, namely, that of dividing the subject of agriculture into specialties, such as plant industry (including agronomy, horticulture, and forestry), animal industry, agrotechny (dairying, sugar making, etc.), rural engineering, and rural economy. This specialization has resulted in the organization of agricultural faculties with professors of agronomy, horticulture, animal industry, etc., instead of, as in former years, one professor charged with teaching the whole subject of agriculture and also, not infrequently, such related subjects as agricultural chemistry, botany, and veterinary science. In some institutions the main divisions are now being subdivided, and professorships of soils, plant breeding, pomology, cattle husbandry, and other subjects are being established.

Much greater attention than formerly is being given to the improvement of methods of teaching agricultural subjects. This is evidenced by the employment of more thoroughly trained teachers, by individual and associated efforts to define and arrange the topics of instruction in accordance with pedagogical principles, by the general adoption of the laboratory system as applied to the field, the plant-house, and the barn, as well as to the buildings constructed with special reference to the peculiar needs of instruction in agricultural subjects.

The collection and devising of apparatus and illustrative material are being pushed with much enthusiasm and success. Wherever means will permit, and in an increasing number of institutions, the housing and equipment of the agricultural department will compare favorably with that of other departments. Along with the improvement of the college courses in agriculture has come the realization of the true function of these courses. It is now well understood that they are for the training of the leaders in agricultural progress, and not for the general education of the agricultural masses. For this purpose they are to be made as thorough and complete internally and externally as the manifold needs of American agriculture for well-trained and intelligent leadership may require. Their success is to be judged by the same standard that is applied to other college courses, and the number of students is not of so much importance as their quality. For the general education of the agricultural people, young and old, other agencies than the four-year college course are to be employed, which will require for their management a large share of the graduates of the agricultural colleges.

THE SHORT AND SPECIAL COURSES.

In the effort to meet the needs of the various classes of students, especially of those who are unable to complete a full college course, the agricultural colleges have been unusually active in recent years in organizing short and special courses of different kinds. Practically all of these institutions have organized such courses, which are planned to meet the needs of young people who may be classified somewhat roughly as follows: (1) Those preparing to enter a four-year agricultural course; (2) those desiring instruction in agricultural subjects, but having insufficient scholastic attainments to carry the full collegiate course; (3) those unable to leave home for an extended course, who desire instruction in some particular phase of agricultural science or wish to become proficient in some branch of agricultural practice; and (4) teachers desiring to prepare themselves to give instruction in nature study and elementary agriculture. The general features of these courses are described in a previous publication of this Office, substantially as follows:[1]

> For students preparing to enter a four-year agricultural course, high-school agricultural courses two or three years in length have been organized; also in some instances one-year or two-year preparatory courses. These high-school courses also serve many more students as finishing courses—preparation for life work. This is the purpose served also by the so-called practical one-year and two-year agricultural courses organized for those of limited scholastic attainment—courses having a minimum of culture studies and pure science and a maximum of applied science.
>
> Great importance attaches to courses of this nature, and great care should be exercised in planning them, because it is the graduates of these courses more than the graduates of the four-year courses who go back to the farms. It will be said, and it is true, that the best and most thorough course of study is none too good for the farmer; that a man should be as well trained for the profession of farming as for the professions of law or medicine. But it must be remembered that there were well-defined courses of study in law and medicine long centuries before the farmer was considered worthy of instruction. In these professions there is now a great body of trained men and specialists from whose ranks special positions may be filled, while in agriculture the men of scientific attainments are comparatively so few and the demand for them in college, station, and other attractive and remunerative positions is so great that few bachelor-degree men feel that they can afford to go back to the farm. For the present, then, and for some years to come, the college of agriculture will have an important mission to perform through its secondary and short courses in the training of young men for the practice of agriculture.
>
> For those actually engaged in agricultural occupations—the farmers, dairymen, and fruit growers, and their sons and daughters who are unable to leave home during

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[1] U. S. Dept. Agr., Office of Experiment Stations Bul. 139.

the busy seasons—the special winter courses have been organized. These courses vary in length from a week or 10 days to 10 or 12 weeks. They are in most cases severely practical. They center around the judging pavilion, the laboratory, the dairy, and the cheeseroom, with lectures and readings to supplement the practicums. The nature of these courses is even more varied than their length of term.

There are numerous courses in general agriculture, including more or less thorough instruction in plant production, animal husbandry, dairying, poultry raising; courses in general dairying, creamery management, farm dairying, cheese making, animal husbandry, horticulture, poultry raising, and domestic science, with more or less of horticulture, floriculture, and like subjects adapted to the needs of young women; courses in agronomy, bee culture, forestry, beet-sugar production, farm mechanics, botany, bacteriology, and entomology; and correspondence courses for farmers and for teachers. Most, if not all, of these courses include instruction in a number of subjects not indicated in the names of the courses. There are also a large number of practicum courses and lecture courses which are confined to a single line of practice, such as cereal judging, stock judging, and the destruction of noxious insects.

The special winter courses are the utility courses, important because of their influence on the present-day agricultural practice and because of the influence of present practice on future practice. And present practice is sure to have a powerful influence on the young people who are to be the future farmers and on the quality of soil, farm machinery, and domestic animals with which these young people will have to do when they take charge of the farms. The special winter courses, then, are an important and legitimate feature of agricultural instruction, capable of giving a strong uplift to present agricultural conditions.

And, finally, there are the summer schools for teachers and the one-year and two-year normal courses, in all of which nature study and elementary agriculture are important features. At least eight colleges have organized courses of this kind, and have found teachers prompt and eager to take advantage of the opportunities thus afforded them for preparing to bring the children committed to their charge into more intimate and sympathetic relations with their natural environment. Some of the States now require that instruction in the elements of agriculture be given in the public schools, and the agricultural colleges in those States are aiding to prepare the teachers for this work. More work of this kind needs to be done in order that country children may learn to know and appreciate the beauties and advantages of rural life, and that city children may be enabled to make use of their more limited opportunities for the employment of trees, shrubs, flowers, and other nature material in making the city more wholesome and beautiful and may have their attention turned to the advantages and opportunities of rural life.

Since the above statements were prepared the growing popular demand for instruction in agriculture in public schools and for teachers capable of imparting such instruction has encouraged the colleges of agriculture to offer better facilities than formerly for the preparation of such teachers. This movement has also been stimulated by the "Nelson amendment" to the annual appropriation act for the United States Department of Agriculture for the year ended June 30, 1908, which provides for increasing the funds appropriated by the Federal Government to the several States and Territories for the support of colleges of agriculture and permits these colleges to devote a part of the increased appropriation to "the special preparation of instructors for teaching the elements of agriculture and the mechanic arts." Several of the colleges have established departments of agricultural education and at least 46 of them now provide training courses in agriculture ranging from summer courses of a few weeks to regular four-year courses with additional graduate work.[1] Four-year courses for teachers are offered by 22 colleges, including colleges for whites in Idaho, Illinois, Indiana, Louisiana, Maine, Massachusetts, Mississippi, Missouri, Nebraska, North Dakota, Oklahoma, Oregon, Rhode Island, Vermont, Washington, West Virginia, and Wisconsin, and schools for negroes in Alabama, Maryland, Missouri, South Carolina, and Texas. Three-year courses are offered by the Arkansas, Florida, and North Dakota agricultural colleges, and by the schools for negroes in Georgia, Louisiana, and Virginia. The agricultural colleges for whites in Idaho, Minnesota, Mississippi, New York, North Carolina, and Texas, and for negroes in Florida, Mississippi, and Oklahoma give two-year courses, and the colleges for whites in Maine, Michigan, Nebraska, North Carolina, and West Virginia, and for negroes in North Carolina offer one-year courses for rural teachers of agriculture. The Alabama Agricultural College offers 15 electives intended especially for teachers.

Twenty-nine of the colleges provide summer schools of agriculture for teachers,[2] five (Connecticut, Massachusetts, Missouri, Pennsylvania, and Utah) cooperate with other agencies, and seven (Florida, both white and negro schools, Kansas, Massachusetts, Oklahoma, Pennsylvania, and South Dakota) conduct correspondence courses for teachers.

The nature and extent of the special courses now offered by a large number of the colleges are shown by the following description of typical courses:

PLANT PRODUCTION.

Among the short winter courses held annually at the College of Agriculture of the University of Missouri is a course in agronomy extending over 14 weeks. This course includes lectures and demonstrations on growing, cultivating, harvesting, judging, and marketing farm products, with required supplementary courses on soils and special work in botany, agricultural chemistry, entomology, and farm buildings and machinery.

This course is open to all applicants over 16 years of age without entrance examination or special preparation of any kind.

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[1] These include schools for negroes in Alabama, Florida, Georgia, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Texas, and Virginia.

[2] Summer schools for teachers are held at the colleges in California, Connecticut, Georgia, Illinois, Kansas, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New York, North Carolina (both white and negro schools), North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia (colored), Washington, West Virginia, and Wisconsin.

DAIRYING.

The winter dairy course at the College of Agriculture of the University of Wisconsin begins about the 1st of November each year, and lasts 12 weeks. It is open to all persons who have had at least six months' experience in creamery or cheese-factory work. Instruction in this course is given as follows:

(1) Lectures and classroom work on the constitution of milk; the conditions which affect creaming and churning; creamery management; creamery and cheese-factory bookkeeping and other matters relating to the business of the creamery and cheese factory; practical cheese making; breeding, selection, feeding, and management of dairy stock; and lectures accompanied by demonstrations on the influence of bacteria in the dairy, and the care and management of boiler and engine.

(2) Laboratory instruction and practice in milk testing by methods adapted to the factory and factory operators.

(3) Butter making daily with modern forms of power centrifugal separators and pasteurizing machines.

(4) Daily practice in cheese making, the operations being carried on as in the regular cheese factory, including the manufacture of Cheddar, Swiss, brick, and Limburger cheese.

(5) Instruction and practice in handling dairy machinery, including firing and caring for boilers, running engines, putting up shafting, cutting and fitting pipe, and other mechanical operations.

STOCK JUDGING.

At the Iowa State College of Agriculture and Mechanic Arts a two weeks' course in judging and feeding animals is held annually early in January. The work is devoted exclusively to score-card practice, judging of horses, cattle, sheep, and hogs, and lectures on feeding the same. At the conclusion of the work with cattle a slaughter test and block demonstration of the various market types of steers is conducted under the supervision of an expert.

A special course in corn judging is held at the same time, and the work is so arranged that those present may take both lines of work.

COTTON SCHOOL.

The Georgia State College of Agriculture inaugurated the first cotton school January 6, 1908, and plans to devote 10 days to a special cotton school each year. The course includes 10 lectures on the soil; 10 on fertilizers; 5 each on the cotton plant, seed selection, cotton diseases, cotton insects, feeding cotton by-products, and cotton machinery; and 3 lectures on cotton warehousing. Special instruction is given in cotton grading, in which the students have an opportunity to handle and grade 10 or more samples of cotton each day, using a score card as guide. Special attention is also given to the character and grade of cotton seed, and arrangements are made for several special evening lectures. Two special courses of 30 days each are offered in January and June to all who desire to specialize in cotton grading and related subjects.

ONE-YEAR RURAL TEACHERS' COURSE.

The North Carolina Agricultural and Mechanical College offers one-year and two-year courses for rural teachers and similar courses for city teachers, as well as a two weeks' spring course of instruction in agriculture and nature study.

The one-year rural teachers' course includes instruction in the following subjects: Methods of teaching agriculture, general agriculture, horticulture, animal husbandry, dairying, diseases of live stock, botany, poultry, entomology, diseases of plants, and agricultural literature.

The students may also elect additional work in any college department, as for example, in agricultural chemistry, land surveying, physics, or drawing.

UNIVERSITY EXTENSION IN AGRICULTURE.

Under the title "University extension" are included all of the efforts of a university or a college to carry instruction to the people outside the limits of its own campus. Though not always spoken of under this head, no university-extension movement in this country has actually been so widespread as that on behalf of agriculture. Broadly speaking, this would properly include the dissemination of agricultural information through the publications of the experiment stations and this Department, of which about 24,000,000 copies are issued annually. But confining ourselves to what is usually considered the more legitimate field of university extension, we find many of the colleges now extending their educational influences over wide areas and among many hundreds of people not enrolled in their regular courses through the agency of farmers' institutes, movable schools of agriculture, reading courses for farmers and farmers' wives, correspondence courses, agricultural experimental unions, demonstration fields, and the introduction of nature study and school-garden work with children. The extension work of the colleges is assuming such importance that special chairs and departments are being established in order to provide definite agencies for the management and development of this work.

The farmers' institutes, which are now held in 47 States and Territories, were attended in 1909 by over 2,240,000 people and supported by appropriations amounting to over $345,600. During the same year 13 States held round-up institutes, 15 held traveling institutes on railroad trains, 1 held a movable school of agriculture at 13 places, 2 held farmers' institute schools at 15 places, 3 held 8 normal institutes, and 1 held an annual convention of 5 sessions. There were 145 women's institutes in 4 States, a number of boys' institutes, and many other special forms of institute work.

A number of the colleges maintain reading courses for farmers, in which certain lines of reading are regularly taken up, review questions are sent out, and the answers received are criticised. Some of the colleges modify this procedure by preparing special publications for the members of its reading courses to study. Reading courses are now conducted under the auspices of the agricultural colleges in Michigan and New York. Closely related to the reading courses are the correspondence courses conducted by the Pennsylvania State College, which enrolls several hundred correspondents who regularly receive mimeograph copies of lessons prepared under the direction of the professor of agriculture in the college, and similar courses in agriculture and horticulture are now offered by the agricultural colleges in Florida, Hawaii, Kansas, Maine, Massachusetts, Oklahoma, South Dakota, and Wyoming. Correspondence courses for public-school teachers are conducted by the colleges of agriculture in Florida (both white and negro schools), Kansas, Massachusetts, Oklahoma, Pennsylvania, and South Dakota. The success of extension work of this kind has led to the establishment recently of six quite strong correspondence schools in agriculture under private auspices.

Experimental unions which are organizations of college graduates and nongraduate students for the purpose of extending the influence of the colleges and experiment stations by means of cooperative experiments with field crops, methods of culture, fertilizers, etc., are now organized in Illinois, Iowa, Ohio, New York, Wisconsin, and possibly one or two other States.

Several of the agricultural colleges are further extending their influence through the preparation of nature-study leaflets, school-extension leaflets, and school-garden leaflets and through lectures and correspondence on the part of their officers to promote a better understanding of the conditions which make up the environment of children in rural sections, the aim being, first, to put children into better sympathy with their surroundings, and, secondly, to prepare the way for instruction in the elements of agriculture in the rural schools.

SECONDARY AGRICULTURAL SCHOOLS.

It was fully 30 years after the first State agricultural college was opened in this country before the first successful agricultural high

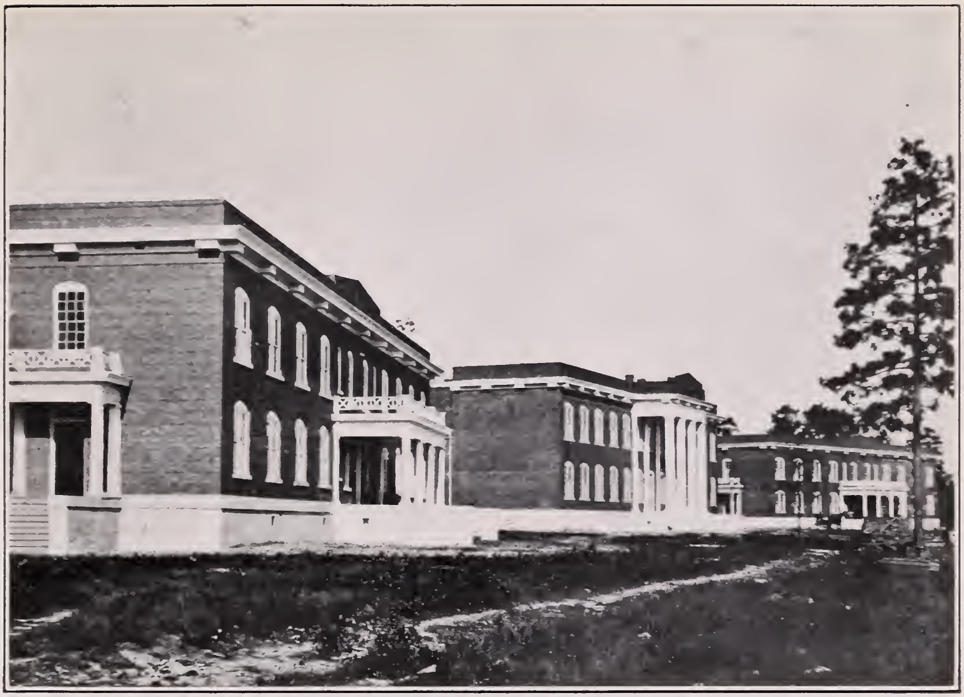

FIG. 1.—BUILDINGS OF THE SECOND DISTRICT AGRICULTURAL SCHOOL, TIFTON, GA.

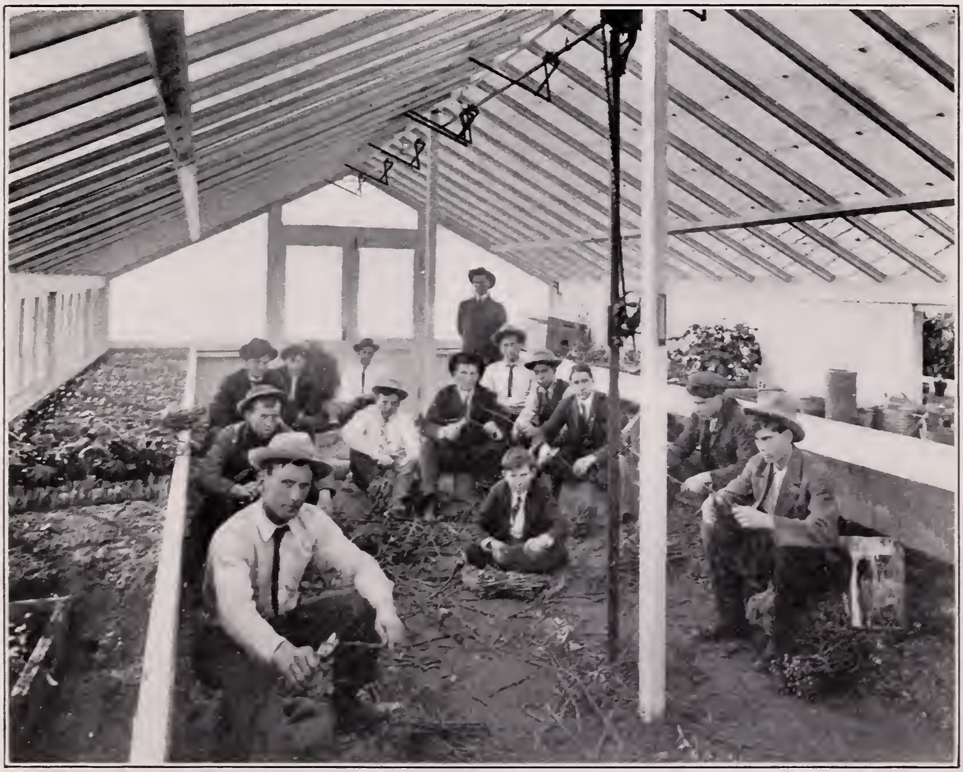

FIG. 2.—STUDENTS OF CALIFORNIA POLYTECHNIC SCHOOL MAKING GRAPE CUTTINGS.

school was established in connection with the College of Agriculture of the University of Minnesota, but the success of that school was so pronounced that within 22 years at least 80 agricultural high schools of different types have been established and, together with 29 public high schools, are receiving State aid for agriculture, while no less than 24 privately endowed colleges and schools are giving instruction in agriculture. Furthermore, over 150 State and county normal schools are preparing young people to teach agriculture, and over 400 public and private high schools and academies are giving some instruction in agriculture.

The Minnesota School of Agriculture was established in 1888. Similar schools of agriculture or two-year or three-year preparatory or "practical" courses intended to serve the same purpose of training young men for the farm without insisting that they first complete a large amount of work in language, mathematics, and the primary sciences, are now maintained in connection with the colleges of agriculture in Alabama, California, Colorado, Connecticut, Florida, Idaho, Louisiana, Maine, Maryland, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Oregon, Rhode Island, South Dakota, Virginia, Washington, and West Virginia.

Of the separate agricultural high schools receiving State aid there are several types, chief among which may be mentioned the congressional district agricultural high schools and the county agricultural high schools. Alabama was the first State to establish an agricultural school in each congressional district. This State now has nine such schools located, respectively, at Jackson, Evergreen, Abbeville, Sylacauga, Wetumpka, Hamilton, Albertville, Athens, and Blountsville. Each school has a branch experiment station connected with it, is provided with land for experimental and instructional purposes, receives $4,500 annually from the State for maintenance, and has an equipment of buildings, animals, and machinery more or less complete. The course of study in each school extends over four years and corresponds in grade to that of other high schools in the State. Usually these schools are connected with local public schools and resident pupils predominate, but there are also quite a number of pupils enrolled from the towns adjoining each school.

Georgia has 11 congressional district agricultural schools located, respectively, at Statesboro, Tifton, Americus, Carrollton, Monroe, Barnesville, Powder Springs, Madison, Clarkesville, Granite Hill, and Douglas. (Pl. IV, fig. 1.) These schools receive the proceeds of the State oil and fertilizer taxes, amounting to about $7,500 annually for each school; but they were provided with land, buildings, electric lights, and other equipment and facilities by means of local contributions. When the board in charge of these schools was considering sites for their location, there was such sharp competition for them that contributions amounting to over $800,000 were made. These included land, each school being provided with not less than 200 acres. The law establishing these schools was passed in July, 1906. The course of study extends over four years and includes two years of grammar-school work and two years of high-school work.

County agricultural high schools which are now in operation in a number of States were first established in Wisconsin in 1902. These schools have been equipped at the expense of the counties where they are located, but the State aids each school to the extent of $4,000 a year to be applied to the running expenses. The first of these schools to be opened were the Marathon County School of Agriculture and Domestic Economy at Wausau and the Dunn County School of Agriculture and Domestic Economy at Menomonie, both of which began work in October, 1902. Since that time similar schools have been opened in Marinette County at Marinette, in Winnebago County at Winneconne, and in La Crosse County at Onalaska. The course of study in each school extends over two years, and the work includes soils, plants, animal husbandry, dairying, rural architecture, blacksmithing, carpentry, and mechanical drawing, for boys; and cooking, laundering, sewing, millinery, floriculture, household bacteriology and physics, home nursing, and home management and decoration, for girls, besides English, United States history, civil government, and commercial arithmetic for both boys and girls. Tuition is free.

There is also a county agricultural high school similar to the Wisconsin schools at Menominee, Mich., and in Mississippi a law has been passed providing for county agricultural high schools with State aid amounting to $1,000 for each school.

The California Polytechnic School, located at San Luis Obispo, was opened October 1, 1903. This is a State institution, established under an act of the legislature of March 8, 1901, to take effect January 1, 1902, "to furnish to young people of both sexes mental and manual training in the arts and sciences, including agriculture, mechanics, engineering, business methods, domestic economy, and such other branches as will fit the students for the nonprofessional walks of life."

On making a careful survey of the educational institutions of the State the trustees found that the greatest need was for a secondary school, giving boys and girls "a training in the arts and sciences which deal peculiarly with country life—the life of the home, the farm, the orchard, the dairy, and the shop." Agriculture, domestic science, and mechanics were therefore made the main lines of instruction in this school. On a farm of 310 acres five large buildings and several smaller buildings have been erected. (Pl. IV, fig. 2.) These include a recitation and administration building 47 by 100 feet, a household arts building, a creamery building 40 by 60 feet, and two dormitories each 40 by 100 feet.

Students are admitted at the age of 15 years and must have had previous training equivalent to the usual grammar-school course. The course of study covers a period of three years. The school is under the management of a board of trustees, including the governor and the superintendent of public instruction as ex officio members.

The California legislature of 1907 made an appropriation of $132,000 for the purchase and equipment of a new farm at Davisville and the establishment of an agricultural high school on its grounds. This farm has been improved and suitable buildings erected on it. The first work of the school was the holding of short courses in agriculture, beginning in January, 1908. This school is patterned after the Minnesota type of high school and is a department of the State University at Berkeley.

The National Farm School, located at Doylestown, Pa., was established in 1896, and provides secondary instruction in agriculture with practical farm work for about 40 boys. The equipment of the school includes a farm of 122 acres, a stone main building, a chemical laboratory, a dairy building, greenhouses, a residence for the dean, barns and other farm buildings, and live stock. The school is supported by a State appropriation, private donations, fees, and sales of farm products. Dr. J. H. Washburn, formerly president of Rhode Island College of Agriculture and Mechanics Arts, is dean of the school.

In Massachusetts an agricultural department has been established in connection with the Mount Hermon School, near Northfield, founded by the late D. L. Moody. For a number of years this school has had a farm of about 100 acres, with a dairy of 200 cows, and fruit orchards, gardens, and a cannery. There was, however, no theoretical instruction in agriculture or horticulture until the autumn of 1903, when departments of instruction in agriculture horticulture, and dairying were organized.

A new secondary school of agriculture and mechanic arts, known as the Smith Agricultural School and Northampton School of Industries, was opened at Northampton October 1, 1908. This school is partly supported by the proceeds of a fund bequeathed to Northampton for an agricultural school by Oliver Smith, which fund has been allowed to accumulate for over 60 years, and amounted in 1905 to over $310,000. The remainder of its support comes from an annual maintenance appropriation of $20,000, half of which is paid by the city of Northampton and half by the State, under the provisions of an act of 1906 creating the Massachusetts Commission of Industrial

Education. The school was conducted temporarily in an old high-school building, but a large brick agricultural building has been constructed and several other buildings have been planned. The school farm consists of about 100 acres of land lying on the outskirts of the city. The institution is coeducational, and at present offers 3 four-year courses of study, viz, a course to prepare for farming, a course to prepare for mechanical work, and a course to prepare for housekeeping and home making. Candidates for admission to the school must be at least 14 years of age, and must either have completed the necessary work to admit them to a high school or "have the maturity of mind of the later grammar-school years." Text-books and tuition are free to all students.

Massachusetts also maintains at least two institutions offering courses in horticulture for women. At Groton there is the Lowthorpe School of Landscape Architecture, Gardening, and Horticulture for Women, conducted under private auspices, and at Northampton, Smith College, which offers several courses in horticulture and landscape gardening.

Another institution which affords instruction in agriculture for women is located in Texas. This is the College of Industrial Arts, at Denton, which was opened to students in September, 1903. Considerable attention is given in its four-year course to the teaching of horticulture and landscape gardening, and the course also includes instruction in floriculture, dairying, and poultry keeping (Pl. V, figs. 1 and 2). Three greenhouses 18 by 40 feet furnish facilities for gardening under glass, and a small nursery has been established. A campus of about 40 acres furnishes opportunity for work in landscape gardening and forestry.

Among other agricultural high schools may be mentioned those at Calvert (Pl. VI, fig. 1) and Philopolis, in Maryland; Montague and Petersham, in Massachusetts; the Minnesota Schools of Agriculture at Crookston and Morris, and the New York State schools of agriculture at Alfred, Canton, and Morrisville. These schools are all supported largely by State funds.

In Virginia a State appropriation of $25,000 is devoted to instruction in agriculture and other industrial subjects in one high school in each congressional district. The schools receiving the benefit of this appropriation are located at Appomattox, Bedford Springs, Burkeville, Chester, Driver, Elk Creek, Hampton, Lebanon, Manassas, and Middletown.

In Oklahoma the legislation enacted by the first State assembly provides for a complete system of agricultural education, including an agricultural high school in each of the five judicial districts, and one additional school in the Panhandle. These schools are located

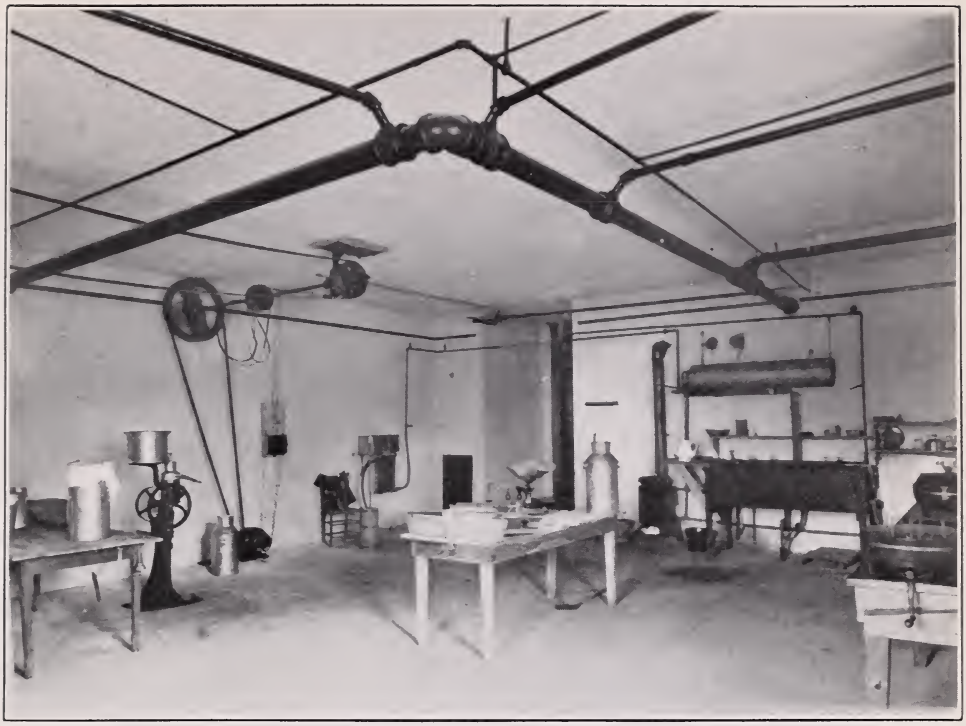

FIG. 1.—DAIRY ROOM, COLLEGE OF INDUSTRIAL ARTS, DENTON, TEX.

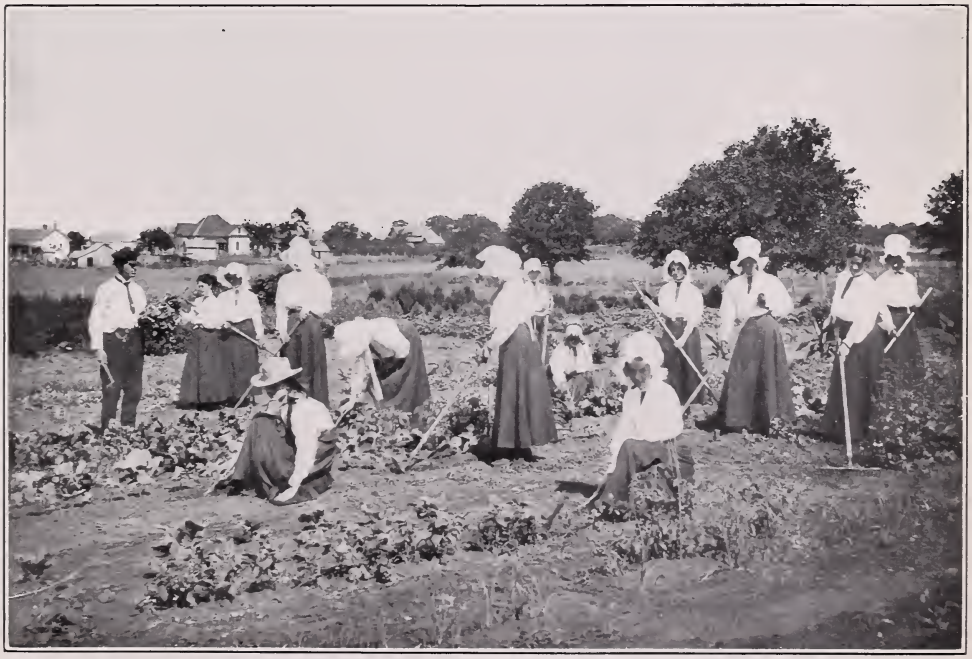

FIG. 2.—GIRLS ENGAGED IN GARDENING, COLLEGE OF INDUSTRIAL ARTS, DENTON, TEX.

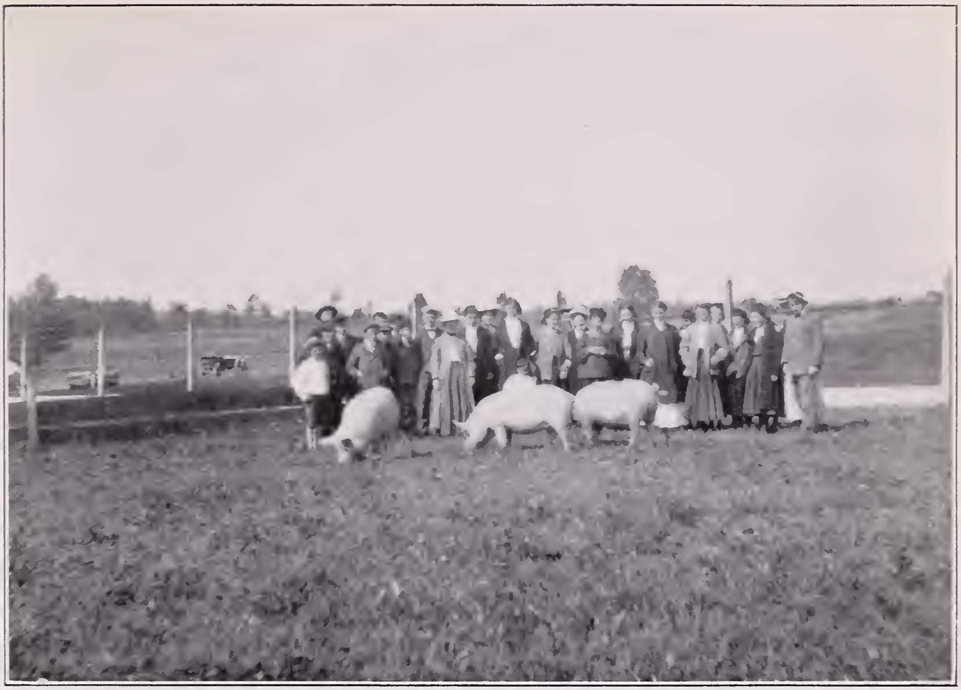

FIG. 1.—PUPILS OF CECIL COUNTY AGRICULTURAL SCHOOL, CALVERT, MD., STUDYING SWINE ON A NEIGHBORING FARM.

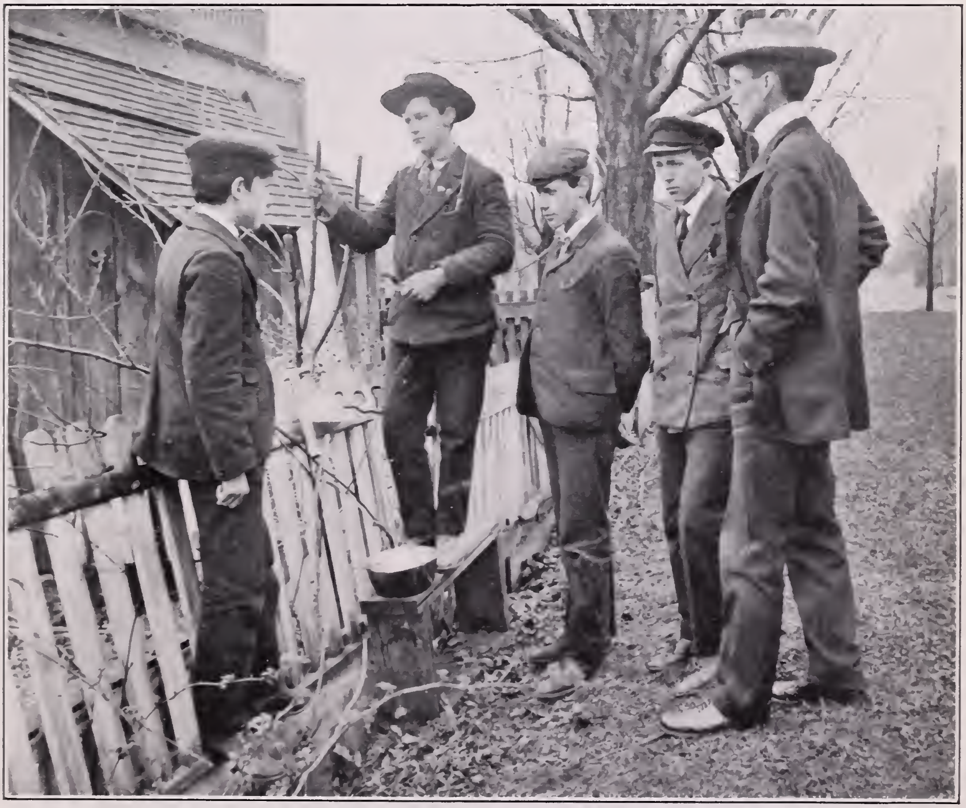

FIG. 2.—STUDENTS OF WATERFORD, PA., HIGH SCHOOL GRAFTING AN APPLE TREE IN A NEIGHBORING YARD.

at Broken Arrow, Goodwell, Helena, Lawton, Tishomingo, and Warner.

The Legislature of Arkansas divided the State into four nearly equal school districts and appropriated $160,000 for the establishment of an agricultural school in each district. Land and funds for buildings have been secured by private subscriptions and the schools have been located at Jonesboro, Magnolia, Monticello, and Russellville.

Another form of State aid for agriculture and other industrial subjects is that in which the State appropriates money to aid in the introduction of such work into existing public high schools, usually limiting the number of high schools to one in each county. It is frequently difficult to draw a clear distinction between a State-aided public high school and schools which are locally designated as county or district agricultural schools. Such schools in Mississippi and Virginia are in reality public high schools receiving State aid for agriculture, but in local parlance they are designated agricultural schools.

In Alabama there is an arrangement whereby county high schools receive State aid. The State board of education prescribes the course of study in these schools and has included agriculture in the prescribed course.

The Legislature of Louisiana has passed a law for the encouragement of agricultural teaching in high schools and voted $500 a year to each school maintaining a course approved by the State board of education. This board has prescribed not only the teaching requirements, but also the minimum equipment in land, animals, machinery, and apparatus.

In New York the education law of 1910 makes provision for the establishment in cities and in "union free school districts" of "schools of agriculture, mechanic arts, and home making, open to pupils who have completed the elementary school course or who have attained the age of 14, or who have met such other requirements as the local school authorities may have prescribed." Each school of agriculture, mechanic arts, and home making established in accordance with the provisions of this act will receive $500 annually from the State if one teacher is employed whose work is devoted exclusively to such school and $200 for each additional teacher so employed.

In Minnesota $25,000 was appropriated for the introduction of agriculture, domestic science, and manual training into 10 high schools or consolidated rural schools, the State to pay two-thirds of the expense of this additional instruction, provided that each school employs trained instructors for the special subjects and provides not less than 5 acres of land for school gardens and demonstration purposes. Ten schools received the benefit of this act in 1909 and several others have met the requirements of the act in order to receive its benefits during the next biennium, the law providing that 10 additional schools may be added after two years.

The Legislature of Texas appropriated $32,000 to provide a fund from which the State board of education is to duplicate amounts not less than $500 nor more than $2,000 that shall have been appropriated by the trustees of any common-school district or independent-school district to the establishing, equipping, and maintaining of departments of instruction in agriculture, including courses in manual training and domestic economy "subsidiary to agriculture." State aid, however, shall not be given more than twice to the same school.

There are also numerous public high schools which have successfully introduced agricultural instruction without State aid. As stated in the summary above, there are now over 400 such high schools in the United States. (Pl. VI, fig. 2.)

Among the State institutions not receiving the benefits of Federal aid and the privately endowed colleges which afford secondary instruction in agriculture are the following: Pomona College, Claremont, Cal.; Bowden College, Bowden, Ga.; William and Vashti College, Aledo, Ill.; Blackburn College, Carlinville, Ill.; Lincoln College, Lincoln, Ill.; Illinois College, Jacksonville, Ill.; Winona College of Agriculture, Winona Lake, Ind.; Lenox College, Hopkinton, Iowa; Humboldt College, Humboldt, Iowa; Berea College, Berea, Ky.; Port Gibson Female College, Port Gibson, Miss.; Bellevue College, Bellevue, Nebr.; Cotner University, Bethany, Nebr.; Union College, College View, Nebr.; Fremont College, Fremont, Nebr.; Grand Island College, Grand Island, Nebr.; Hastings College, Hastings, Nebr.; York College, York, Nebr.; Miami University, Oxford, Ohio; Nashville Agricultural and Normal Institute, Madison, near Nashville, Tenn.; Brigham Young University, Provo, Utah; Brigham Young College, Logan, Utah; and College of William and Mary, Williamsburg, Va.

ELEMENTARY SCHOOLS.

The growth of sentiment in favor of teaching the principles of agriculture in the elementary schools has been rapid in recent years. There are now 13 States in which the teaching of agriculture in the rural common schools is required by law. It is encouraged by State and county school officers, and taught in some of the rural schools of 31 other States. In all, 44 States and outlying possessions are making some effort to teach the underlying principles of agriculture in the rural common schools.

For several years there have been a number of special or private elementary schools which have taught agriculture with apparent success. Among these are the Hartford School of Horticulture and the Watkinson Farm School, near Hartford, Conn., the Farm and

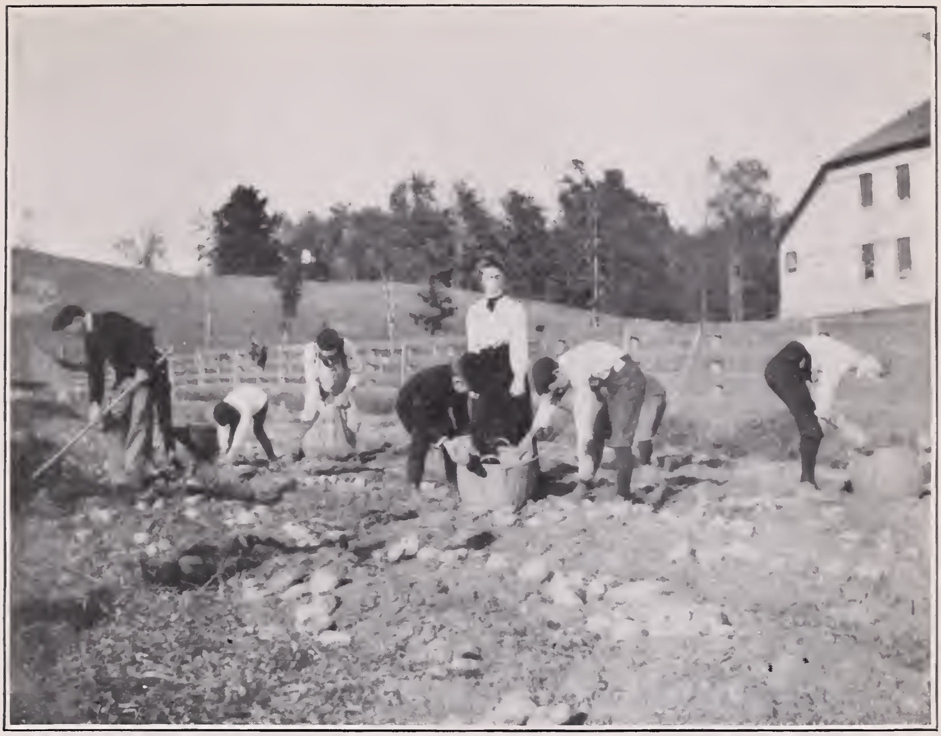

FIG. 1.—POTATOES RAISED BY PUPILS IN THE PRACTICE SCHOOL OF VERMONT STATE NORMAL SCHOOL.

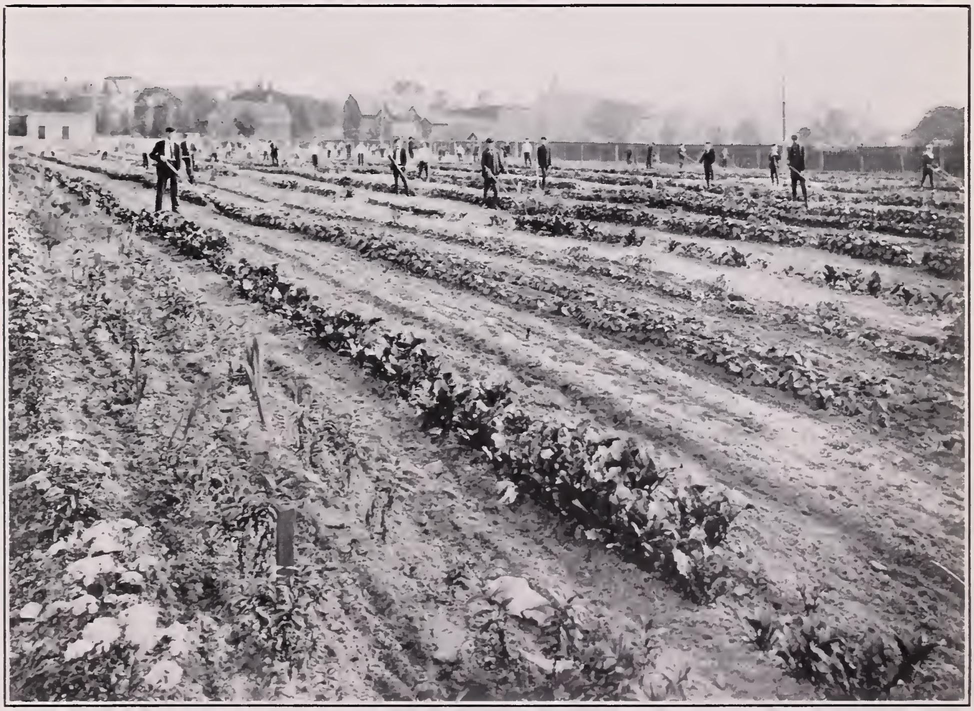

FIG. 2.—CLEVELAND HOME GARDENING ASSOCIATION TRAINING GARDEN.

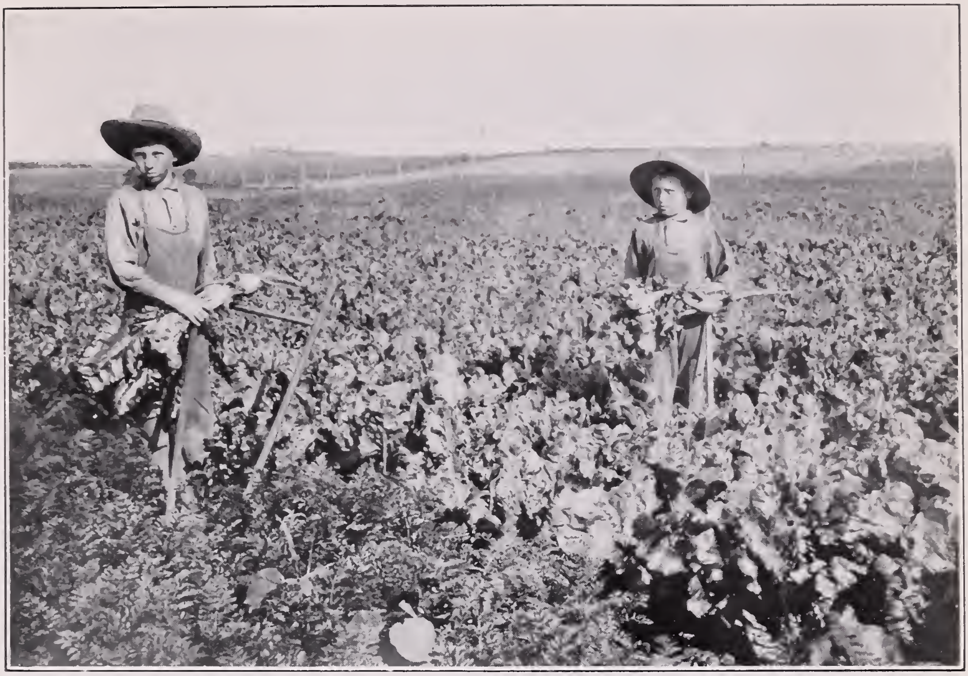

FIG. 1.—WINNEBAGO COUNTY, ILL., BOYS AND THEIR SUGAR-BEET EXPERIMENTS.

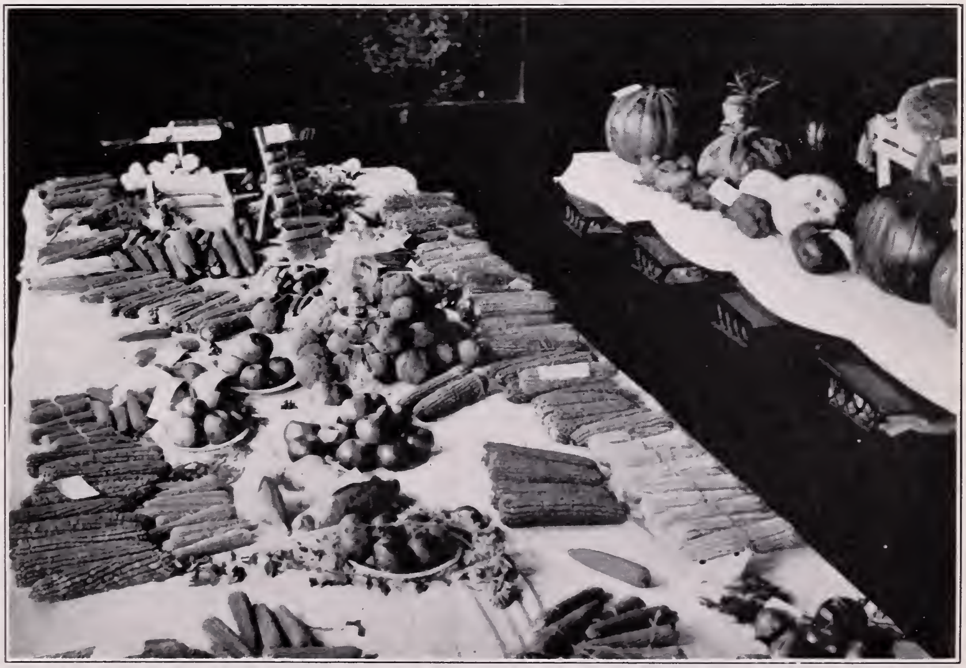

FIG. 2.—EXHIBIT OF FARM PRODUCTS BY SCHOOL BOYS OF KEOKUK COUNTY, IOWA.

Trades School, in Boston Harbor, Mass., and the Haight Agricultural School, Muskegon, Mich.

The Baron de Hirsch Agricultural and Industrial School, at Woodbine, N. J., regularly opened for students in 1894, provides general and agricultural education of elementary grade, combined with a large amount of practical farming and horticulture, for a limited number of boys and girls.

There are somewhat similar schools at East Lake, Ala., Rabun Gap and Rome, Ga., and Weiser, Idaho.

The agricultural work which is now being attempted in the public schools in different parts of the country includes not only instruction by means of textbooks, of which there are now a considerable number, but also several different phases of practice work or special instruction, among which are the following:

(1) Nature study with plants, farm crops, domestic animals, and soils.

(2) School-garden work, including the growing of flowers, vines, and shrubbery for the improvement of school and home grounds and of vegetables in gardens at the schools or at home (Pl. VII, figs. 1 and 2).

(3) Lecture courses and institutes for rural school children referred to above under the discussion of university extension work in agriculture.

(4) The organization of clubs among rural school children to encourage the boys to undertake simple experiments with fertilizers and field crops, and the girls to engage in some kind of domestic-science work (Pl. VIII, figs. 1 and 2). Very successful boys' corn clubs, cotton clubs, potato clubs, and other like organizations have been developed in different parts of the country, and similar success has attended the efforts to organize the girls into domestic-science clubs in Illinois, Nebraska, Texas, and other States.

(5) Boys' rural encampments, in which regular camp duties are interspersed with athletics and other amusements, lectures, instruction in agriculture, and practice in judging farm crops and live stock.

SCHOOLS FOR NEGROES AND INDIANS.

Under the discussion of collegiate institutions affording instruction in agriculture, the fact was mentioned that in 16 States a part of the funds received from the Federal Government were used in the support of special schools for negroes and Indians. These institutions are generally spoken of as colleges, but with few exceptions the grade of instruction would be more properly designated as secondary. In addition to these institutions receiving Federal and State aid there are quite a number of secondary and elementary schools for negroes and Indians which are supported with State or private funds, or both. Among these are Snow Hill Normal and Industrial Institute, Snow Hill, Ala.; Talladega College, Talladega, Ala.; Agricultural School of the Tuskegee Normal and Industrial Institute, Tuskegee Institute, Ala.; Hungerford Normal and Industrial School, Eatonville, Fla.; Fessenden Academy, Fessenden, Fla.; Americus Institute, Americus, Ga.; Clark University, Atlanta, Ga.; Haines Normal and Industrial School, Augusta, Ga.; Fort Valley High and Industrial School, Fort Valley, Ga.; Dorchester Academy, Thebes, Ga.; Allen Normal and Industrial School, Thomasville, Ga.; Sabine Industrial Institute, Converse, La.; Laurel Agricultural and Industrial Institute, Laurel, Md.; Normal and Agricultural Institute, Sandy Spring, Md.; Tougaloo University, Tougaloo, Miss.; Santee Normal Training School, Santee, Nebr.; Manual Training and Industrial School for Colored Youth, Bordentown, N. J.; State Normal School, Elizabeth City, N. C.; State Normal School, Fayetteville, N. C.; High Point Normal and Industrial School, High Point, N. C.; Gregory Normal Institute, Wilmington, N. C.; Creek-Seminole Agricultural University, Boley, Okla.; Morristown Normal and Industrial College, Morristown, Tenn.; Christiansburg Industrial Institute, Cambria, Va.; Gloucester Agricultural and Industrial School, Cappahosic, Va.; Temperance, Industrial, and Collegiate Institute, Claremont, Va.; Dinwiddie Agricultural and Industrial School, Dinwiddie, Va.; St. Paul Normal and Industrial School, Lawrenceville, Va.; Virginia Normal and Industrial Institute, Petersburg, Va.; and Storer College, Harpers Ferry, W. Va.

Mention should also be made of a number of elementary schools for negroes and Indians, among which are the following: Kowaliga Institute, Benson, Ala.; Calhoun Colored School, Calhoun, Ala.; Centerville Industrial Institute, Centerville, Ala.; Corona Normal and Industrial Institute, Corona, Ala.; People's Village School, Mount Meigs, Ala.; Cottage Grove Academy, Nixburg, Ala.; Stillman Institute, Tuscaloosa, Ala.; Fort Mohave Indian School, Mohave City, Ariz.; Negro Normal and Industrial School, Social Circle, Ga.; Joseph Keasby Brick Agricultural, Industrial, and Normal School, Enfield, N. C.; St. Augustine's School, Raleigh, N. C.; Chilocco Indian Training School, Chilocco, Okla.; Jones Academy, Dwight, Okla.; Cherokee Male Seminary, Tahlequah, Okla.; Indian Industrial School, Carlisle, Pa.; Port Royal Agricultural School, Beaufort, S. C.; Voorhees Industrial School, Denmark, S. C.; Sterling Industrial College, Greenville, S. C.; Mayesville Educational and Industrial Institute, Mayesville, S. C.; Penn Normal, Industrial, and Agricultural School, Frogmore, St. Helena Island, S. C.; Manassas Industrial School for Colored Youth, Manassas, Va.; and the St. Emma Industrial and Agricultural College, Rock Castle, Va.